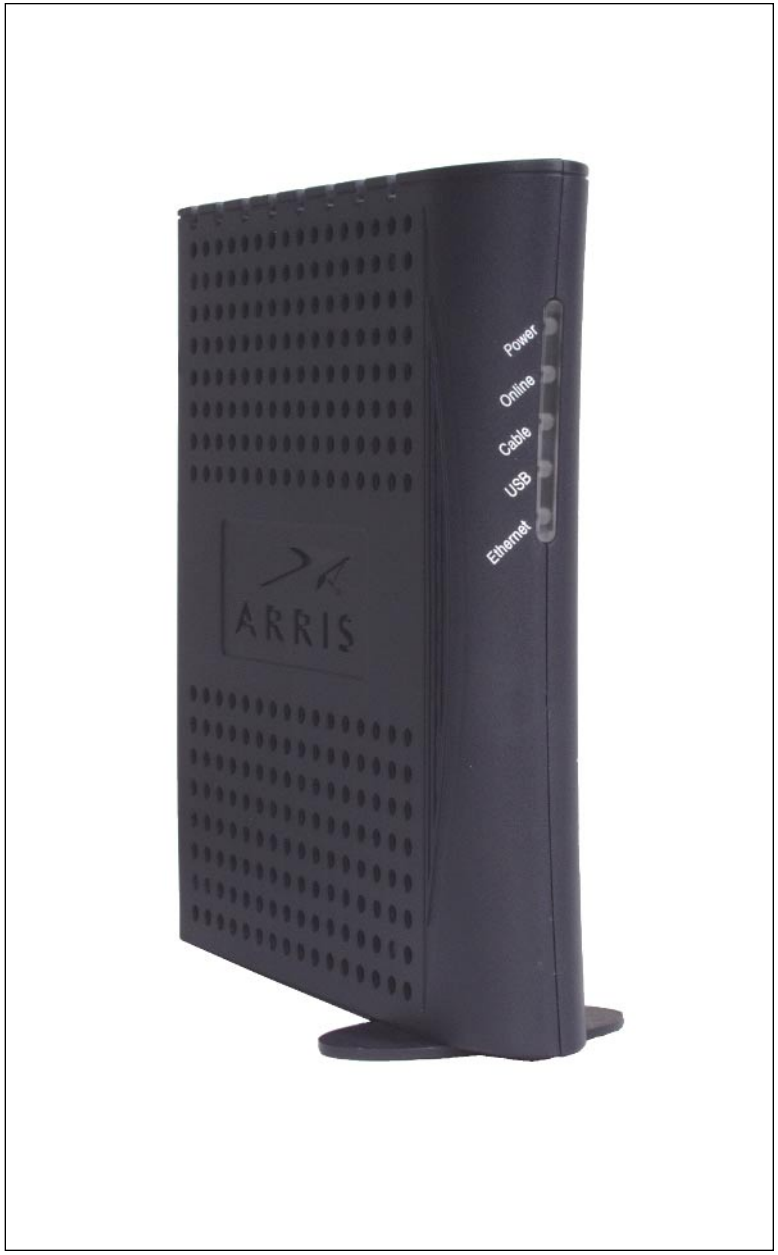


# Touchstone™ CM300 Cable Modem User's Guide

Get ready to experience the Internet's express lane! Whether you're checking out streaming media, downloading new software, or checking your email, the Touchstone CM300 Cable Modem brings it all to you faster and more reliably. The high-speed, always-on connection won't keep you waiting.

The Touchstone CM300 Cable Modem provides a USB connection for easy hookup to USB-capable PCs, and a 10/100 Base-T Ethernet connection for a LAN or individual computer. **You can use both connections at the same time.**

Installation can be as simple as making three connections and restarting your computer. Your cable company will provide help with any special requirements.

Follow the links below for more information and detailed instructions.

Safety Requirements

Getting Started

Installing and Connecting Your Cable Modem

Installing USB Drivers on Your PC

Using the Cable Modem

Troubleshooting

Product Specifications

Glossary

This product may not be exported outside the U.S. and Canada without U.S. Department of Commerce, Bureau of Export Administration authorization. Any export or re-export by the purchaser, directly or indirectly, in contravention of U.S. Export Administration Regulation is prohibited.

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Document number: ARSVD00617
Release 1  Preliminary 1.1  October 2002

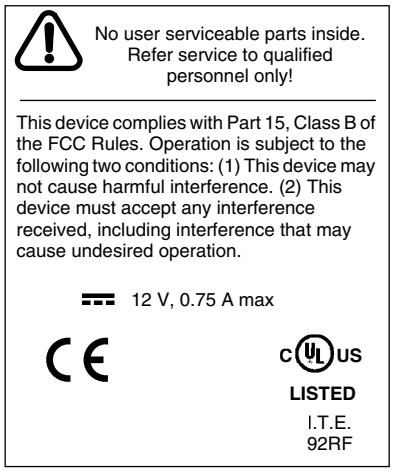
# Safety Requirements

ARRIS complies with the applicable requirements for performance, construction, labeling, and information as outlined below:

- Do not use the Cable Modem near water (i.e. wet basement, bathtub, sink or near a swimming pool, etc.). Avoid pouring or spilling liquids on the Cable Modem.
- Avoid using and/or connecting the Cable Modem during an electrical storm.
- Do not locate the Cable Modem near a heat source (i.e. heat registers, space heaters, fireplaces, etc.).
- Use only AC adapter and power cord included with the Cable Modem.
- Install the Cable Modem near an easily accessible AC socket-outlet.

## Markings, Symbols, and Labels

### Regulatory Symbols


No user serviceable parts inside.
Refer service to qualified
personnel only!
This device complies with Part 15, Class B of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation.
12 V, 0.75 A max
c UL us
LISTED
I.T.E.
92RF

### Functional Indicators

| Symbol | Definition |
|---|---|
| | Instructions: The exclamation point within a triangle alerts you to the presence of important operating and maintenance instructions. |
| | Alternating Current: A terminal to which or from which an alternating (sine wave) current or voltage may be applied or supplied. |
| | Direct Current: A terminal to which or from which a direct current or voltage may be applied or supplied. |

## Radio Frequency Emissions and Immunity

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## Product Safety

UL listed per UL60950.

## European Compliance

This product complies with the provisions of the Electromagnetic Compatibility (EMC) Directive (89/336/EEC), the Amending Directive (92/31/EEC), the Low Voltage Directive (73/23/EEC), and the CE Marking Directive (93/68/EEC). As such, this product bears the CE marking in accordance with the above applicable Directive(s).

A copy of the Declaration of Conformity may be obtained from: ARRIS, 3871 Lakefield Drive, Suite 300, Suwanee, GA 30024.

# Getting Started

## About Your New Cable Modem

The Touchstone CM300 Cable Modem is a DOCSIS 1.1-compliant (and DOCSIS 2.0 A-TDMA ready) cable modem with the following features:

- Speed: much faster than dialup or ISDN service
- Convenience: supports USB 1.1 and Ethernet; both can be used simultaneously
- Security: a **Standby** button lets you isolate connected computer(s) from the Internet without shutting off the Cable Modem
- Compatibility: supports tiered data services (if offered by your cable company)
- Enhanced troubleshooting: a web-based interface lets you access Cable Modem status information from a computer connected to the Cable Modem

## What's in the Box?

Make sure you have the following items before proceeding. Call your cable company for assistance if anything is missing.

- Cable Modem
- AC Adapter
- Quick Installation Guide
- USB Cable
- Ethernet Cable
- CD-ROM

## What's on the CD?

The CD provides the following items:

- Animated Installation Guide
- Quick Install Guide
- User's Guide
- Adobe Acrobat Reader
- ARRIS Contact Information
- End User License Agreement

**Coax Cable**

## Items You Need

If you are installing the Cable Modem yourself, make sure you have the following items on hand before continuing:

- **Cable modem package**: see What's in the Box? for a list of items in the package.
- **Coaxial cable (coax)**: as shown in the picture to the left, this is a thin cable with a connector on each end. It is the same kind of wire used to connect your television for cable TV. You can buy coax from any electronics retailer and many discount stores; make sure it has connectors on both ends. (There are two types of connectors, slip-on and screw-on; the screw-on connectors are best for use with your Cable Modem.) The coax should be long enough to reach from your Cable Modem to the nearest cable outlet.

  ARRIS recommends using only high-quality RG-6 coax.
- **Splitter (optional)**: provides an extra cable connection by splitting a single outlet into two. You may need a splitter if you have a TV already connected to the cable outlet that you want to use. You can buy a splitter from any electronics retailer and most discount stores; you may also need a short piece of coaxial cable (with connectors); use it to connect the splitter to the cable outlet and then connect the Cable Modem and TV to the splitter.
- **Information packet**: your cable company should furnish you with a packet containing information about your service and how to set it up. Read this information carefully and contact your cable company if you have any questions.

**USB Cable**

**Ethernet Cable**

## USB or Ethernet?

There are two ways to connect your computer (or other equipment) to the Cable Modem. The following will help you decide which is best for you:

### USB

USB (Universal Serial Bus) is meant for connecting a variety of accessories, such as keyboards, mice, printers, and communications devices (including cable modems) to a single PC. Use the USB connection if you have only one computer, and the computer is using a Windows operating system (Windows 98 Second Edition or later).

The Cable Modem package comes with a 4-foot (1.2m) USB cable; you can purchase a longer cable if necessary at a computer retailer. Ask for an **USB A/B cable**—it has a long narrow connector on one end (to connect to the PC) and a square connector on the other end (to connect to the Cable Modem).

### Ethernet

Ethernet is a standard method of connecting two or more computers into a Local Area Network (LAN). Use the Ethernet connection if your PC does not use Windows, or you want to share the Cable Modem connection with several computers.

**Note:** To connect two or more computers to the Ethernet port, you need a hub or broadband router (available at computer retailers).

The Cable Modem package comes with a 4-foot (1.2m) Ethernet cable (the connectors look like wide telephone connectors); you can purchase more cables if necessary at a computer retailer. If you are connecting the Cable Modem directly to a PC, or to an Ethernet hub or broadband router with a cross-over switch, ask for Category 5 (CAT5) straight-through cable. If you are connecting the Cable Modem to an Ethernet hub or broadband router without a crossover switch, ask for a Category 5 crossover cable.

### Both

If you have two or more computers, you can connect one computer to the Cable Modem's USB port and one or more to the Ethernet port. To connect two or more computers to the Ethernet port, you need a hub or broadband router (available at computer retailers).

## System Requirements

The Touchstone Cable Modem operates with most computers. The following describes requirements for each operating system; see the documentation for your system for details on enabling and configuring networking.

To use the Cable Modem, you need DOCSIS high-speed Internet service from your cable company.

**Windows**
Ethernet connection: Windows 95 or later

USB connection: Windows 98 SE (Second Edition) or later

**MacOS**
Ethernet connection only: System 7.5 or later; Open Transport recommended

**Linux/other Unix**
Ethernet connection only: Hardware drivers, TCP/IP, and DHCP must be enabled in the kernel

**Others**
Ethernet connection only: ask your cable company for help

# Installing and Connecting Your Cable Modem

Before you start, make sure that:

- The cable company has set up your account. You should have an information packet that describes your service.
- The Cable Modem serial number and MAC address matches the number shown in your information packet.
- Cable and power outlets are available near the chosen location.

## Getting Service

If you purchased your ARRIS Cable Modem through your local cable company, you should already have everything you need to connect and use it.

If you have not already arranged for high-speed Internet service from your cable company, contact the cable company's sales office.

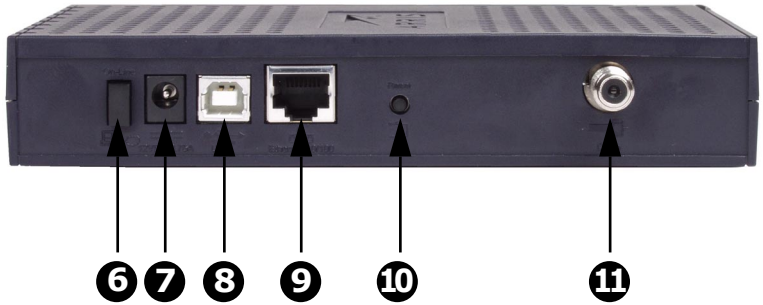
**Cable Modem Front Panel**

## Front Panel

The front of the Cable Modem has the following indicators and controls:

1. **Ethernet**: flickers when sending or receiving data to the PC over the Ethernet connection; on steadily otherwise.
2. **USB**: blinks when sending or receiving data to the PC over the USB connection; on steadily otherwise.
3. **Cable**: blinks when sending or receiving data on the cable system; on steadily otherwise.
4. **Online**: blinks when the Cable Modem is isolated from the Internet (by pressing the **Standby** button on the rear of the Cable Modem); on when the Cable Modem is connected.
5. **Power**: blinks when the Cable Modem is setting up; on steadily when ready for use.

**Cable Modem Rear Panel**




## Rear Panel

The rear of the Cable Modem has the following connectors and controls:

**6** **Standby** button: press once to disconnect all PCs connected to the Cable Modem from the network; press again to reconnect. The **Online** light shows you the current standby state.

**7** Power: plug the AC adapter in here.

**8** USB connector: for connecting the Cable Modem directly to a PC.

**9** Ethernet connector: for connecting the Cable Modem to a PC or home network LAN.

**10** **Reset** button: resets the Cable Modem as if you disconnected power. Use a pointed non-metallic object to press this button.

**11** Cable: plug the coax cable in here.

## Mounting the Cable Modem

You can either mount the Cable Modem on a wall or place it on a desktop. For wall-mount applications, you can mount the Cable Modem with the indicators facing upward (vertical) or to the size (horizontal).

### Tools and Materials

Make sure you have the following tools and materials before proceeding:

- a wrench (for securing the coax connector)
- For wall-mount installations:
  - screwdriver (flat-blade or Phillips, depending on what kind of screws you use)
  - wall-mount template (included with the Cable Modem Quick Installation Guide)
  - transparent tape (for temporarily securing the mounting template to the wall)
  - for mounting on plywood or studs: two #8 x 38.1 mm (1.5 inches) self tapping screws; the head diameter should be approximately 6 mm (0.25 inches)
  - for mounting on drywall: two 1.5 inch (35mm or 40mm) anchor bolts

### Location

Always position the Cable Modem:

- within 1.3 m (4 feet) of an AC outlet. The power cord must reach the outlet without stretching and without adding extension cords.
- near a cable outlet (to avoid long cable runs).

**Note:** When mounting the Cable Modem on drywall, try to position the Cable Modem so the screws are fastened to a stud. This may prevent the Cable Modem from pulling out of the wall in the future.

## Instructions

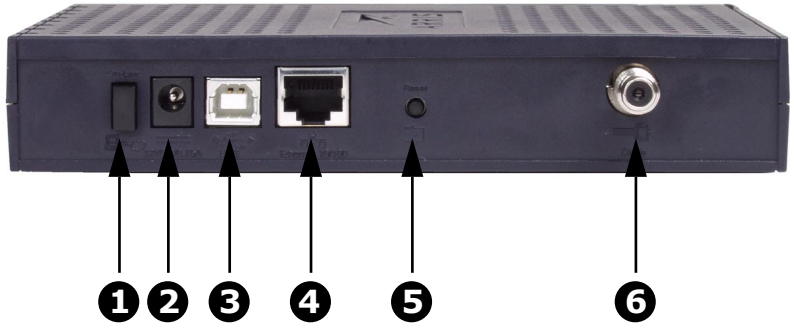
### Wall-mounting instructions

1. Position the mounting template on the surface where you intend to mount the Cable Modem and secure in place with transparent tape.
2. Drill holes through the template in the specified locations for the mounting screws. After drilling holes, remove the template from the surface.
3. Drive both of the screws (or anchor bolts) into the wall. Leave a gap of about 6 mm (0.250 inches) between the screw head and the wall.
4. Orient the Cable Modem with the indicator lights facing up or right, as desired. Slip both mounting slots (in the back of the Cable Modem) over the screws, then slide the case down until the narrow end of the keyhole slot contacts the screw shaft.
5. Proceed to Connecting the Cable Modem.

### Desktop mounting instructions

6. Position the Cable Modem so that:
   - air flows freely around it
   - the back faces the nearest wall
   - it will not fall to the floor if bumped or moved
7. If you want to stand the Cable Modem up on its side, pull the oval foot out slightly, twist the foot (as shown), and place the Cable Modem in the desired location.
8. Proceed to Connecting the Cable Modem.

**Rear Panel**




**1** **Standby** button

**2** Power

**3** USB

**4** Ethernet

**5** **Reset** button

**6** Cable

## Connecting the Cable Modem

**1** Connect one end of the coaxial cable to the cable outlet or splitter, and the other end to the Cable Modem's Cable connector. Tighten the connections by hand, then tighten 1/8 turn with a wrench.

**Note:** Improperly tightened coaxial cable connectors can cause data errors, making your connection slower.

**2** Insert the plug from the AC adapter into the Power connector on the Cable Modem.

**3** Insert the power cord into a convenient AC outlet.

*The Power light on the front of the Cable Modem should light up, then start flashing. See Troubleshooting if the Power light does not turn on.*

**4** After connecting the coax cable and power, proceed as needed:

- Making USB Connections
- Making Ethernet Connections

**Note:** Do not connect a single computer to both the Ethernet and USB ports.

### Making USB Connections

**5** Connect one end of the USB cable to the USB port on the computer, and the other end to the USB port on the back of the Cable Modem.

*Your PC should detect the Cable Modem and begin installing the drivers. See Installing USB Drivers on Your PC for driver installation details.*

### Making Ethernet Connections

**6** Connect one end of the Ethernet cable to the port on the back of the Cable Modem labeled "Ethernet 10/100," and the other end to the Ethernet port on a computer, hub, or broadband router.

**Note:** If you are connecting to a computer, use the Ethernet cable included in the Cable Modem package unless it is too short. Longer Ethernet cables are available from any computer retailer.

# Installing USB Drivers on Your PC

When you plug the Cable Modem into the PC's USB port, Windows automatically detects the hardware and begins installing the USB drivers.

## Requirements

Make sure you have the following before attempting to install the USB drivers:

- PC with:
  - CD-ROM drive
  - at least one free USB port
  - one of: Windows 98SE, Windows 2000, Windows ME, or Windows XP (Windows 95 and Windows NT are **not** supported)
  - ARRIS USB Driver CD
- USB A/B Cable of appropriate length (a cable is included in your Cable Modem package)
- (for installations not using DHCP) IP address, subnet, gateway, and DNS information

## Installation Instructions

Select the link for your operating system to see the installation instructions.

- Installing USB Drivers on Windows 98SE
- Installing USB Drivers on Windows 2000
- Installing USB Drivers on Windows XP
- Installing USB Drivers on Windows ME

## Installing USB Drivers on Windows 98SE

Follow these steps to install USB drivers on Windows 98 Second Edition.

1. Make sure the Cable Modem is on (the **Power** light should be on). If not, connect the AC adapter as described in Connecting the Cable Modem.
2. Insert the CD that came with the Cable Modem package into the CD-ROM drive.
3. Plug the appropriate end of the USB cable into the Cable Modem and the other end into the computer's USB port.

   *The following window appears, indicating that the PC has detected a new USB device:*

Add New Hardware Wizard
This wizard searches for new drivers for:
USB Composite Device
A device driver is a software program that makes a hardware device work.
< Back
Next >
Cancel

**4** Wait for the system to start the Add New Hardware Wizard and display the following window (there may be a short delay):

Add New Hardware Wizard
What do you want Windows to do?
Search for the best driver for your device. (Recommended).
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

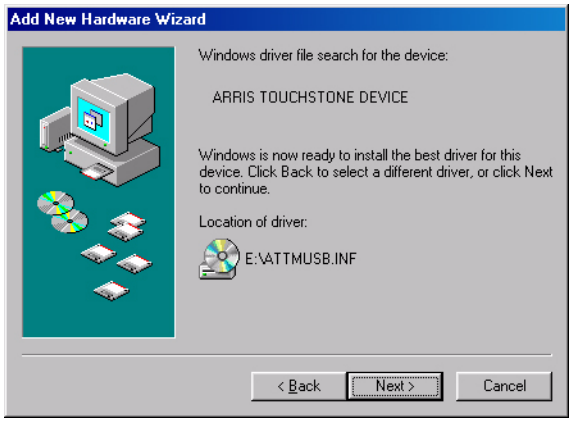
**5** Select "Search for the best driver" and click the **Next** button.

*The wizard displays a list of search options:*

Add New Hardware Wizard
Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
Floppy disk drives
CD-ROM drive
Microsoft Windows Update
Specify a location:
A:\
Browse...
< Back
Next >
Cancel

6 Make sure the **CD-ROM** option is selected (checked), then click the **Next** button.

*The wizard searches the specified locations, then displays the location and name of the appropriate driver.*


Add New Hardware Wizard
Windows driver file search for the device:
ARRIS TOUCHSTONE DEVICE
Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
E:\ATTMUSB.INF
< Back
Next >
Cancel

**Note:** If the wizard can not find the CD drive, and the CD is inserted properly, follow these steps:

**a.** On the Windows desktop, open "My Computer" and note the letter of the Compact Disc (or CD-ROM) drive (on most systems, the CD drive is at D: or E:)

**b.** Return to the Found New Hardware Wizard, and click the **Back** button.

*The wizard displays the previous screen, shown in step 5.*

**c.** Select "Specify a Location," then choose the drive letter that corresponds to the CD drive from the menu.

**d.** Click the Next button.

*You should now see the screen shown above. If not, contact your cable company for help.*

**7** Click the **Next** button.

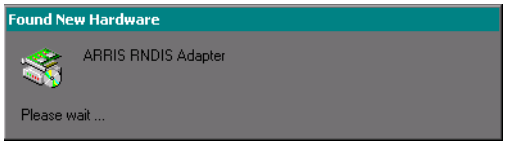
*The wizard installs the drivers, then displays a window indicating that the installation is complete.*

## Installing USB Drivers on Windows 2000

Follow these steps to install USB drivers on Windows 2000.

1. Make sure the Cable Modem is on (the **Power** light should be on). If not, connect the AC adapter as described in Connecting the Cable Modem.
2. Insert the CD that came with the Cable Modem package into the CD-ROM drive.
3. Plug the appropriate end of the USB cable into the Cable Modem and the other end into the computer's USB port.

   *The following window appears, indicating that the PC has detected a new USB device:*

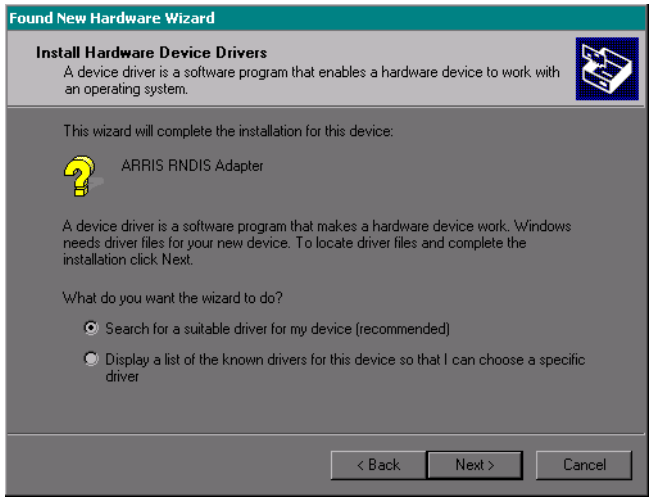



4. Wait for the system to start the installation wizard and display the following window (there may be a short delay):

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

**5** Click the **Next** button.

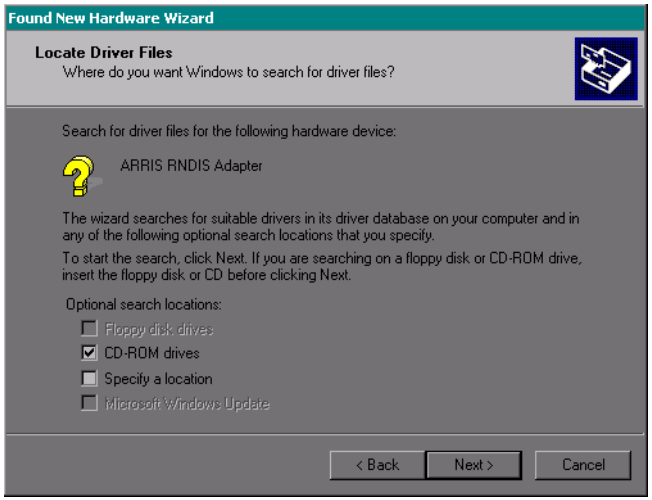
*The wizard prompts you for the location of the drivers.*


Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
ARRIS RNDIS Adapter
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

**Note:** The dialog indicates that the wizard is looking for the ARRIS RNDIS (Remote Network Device Interface Specification) driver for the Cable Modem.

**6** Select "Search for a suitable driver...", then click the **Next** button.

*The wizard displays a list of search options.*


Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
ARRIS RNDIS Adapter
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

7 Make sure the **CD-ROM** option is selected (checked), then click the **Next** button.

*The wizard searches the specified locations, then displays the location and name of the appropriate driver.*

Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
ARRIS RNDIS Adapter
Windows found a driver for this device. To install the driver Windows found, click Next.
d:\attmusb.inf
< Back
Next >
Cancel

**Note:** If the wizard can not find the CD drive, and the CD is inserted properly, follow these steps:

**a.** On the Windows desktop, open "My Computer" and note the letter of the Compact Disc (or CD-ROM) drive (on most systems, the CD drive is at D: or E:)

**b.** Return to the Found New Hardware Wizard, and click the **Back** button.

*The wizard displays the previous screen, shown in step 6.*

**c.** Select "Specify a Location," then choose the drive letter that corresponds to the CD drive from the menu.

**d.** Click the Next button.

*You should now see the screen shown above. If not, contact your cable company for help.*

**8** Click the **Next** button.

*The wizard installs the drivers, then displays a window indicating that the installation is complete.*

Found New Hardware Wizard
Completing the Found New Hardware Wizard
ARRIS TOUCHSTONE DEVICE
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

**9** Click the **Finish** button.

## Installing USB Drivers on Windows XP

Follow these steps to install USB drivers on Windows XP.

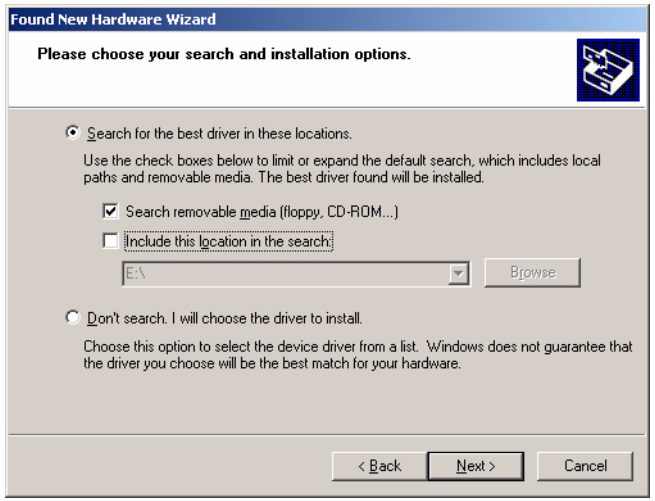
1. Make sure the Cable Modem is on (the **Power** light should be on). If not, connect the AC adapter as described in Connecting the Cable Modem.
2. Insert the CD that came with the Cable Modem package into the CD-ROM drive.
3. Plug the appropriate end of the USB cable into the Cable Modem and the other end into the computer's USB port.

   *The following window appears, indicating that the PC has detected a new USB device:*

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
ARRIS RNDIS Adapter
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

4 Click the **Next** button.

*The wizard prompts you for the location of the drivers.*


Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
E:\
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

5 Select "Search for the best driver" and "Search removable media," then click the **Next** button.

*The wizard installs the drivers, then displays a window indicating that the installation is complete.*

Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
ARRIS TOUCHSTONE DEVICE
The hardware you installed will not work until you restart your computer.
Click Finish to close the wizard.
< Back
Finish
Cancel

6 Click the **Finish** button.

## Installing USB Drivers on Windows ME

Follow these steps to install USB drivers on Windows Millennium Edition.

1. Make sure the Cable Modem is on (the **Power** light should be on). If not, connect the AC adapter as described in Connecting the Cable Modem.
2. Insert the CD that came with the Cable Modem package into the CD-ROM drive.
3. Plug the appropriate end of the USB cable into the Cable Modem and the other end into the computer's USB port.

   *The following window appears, indicating that the PC is installing drivers for a new USB device:*

4. When the window disappears, installation is complete. Contact your cable company if you see an error message of any kind.

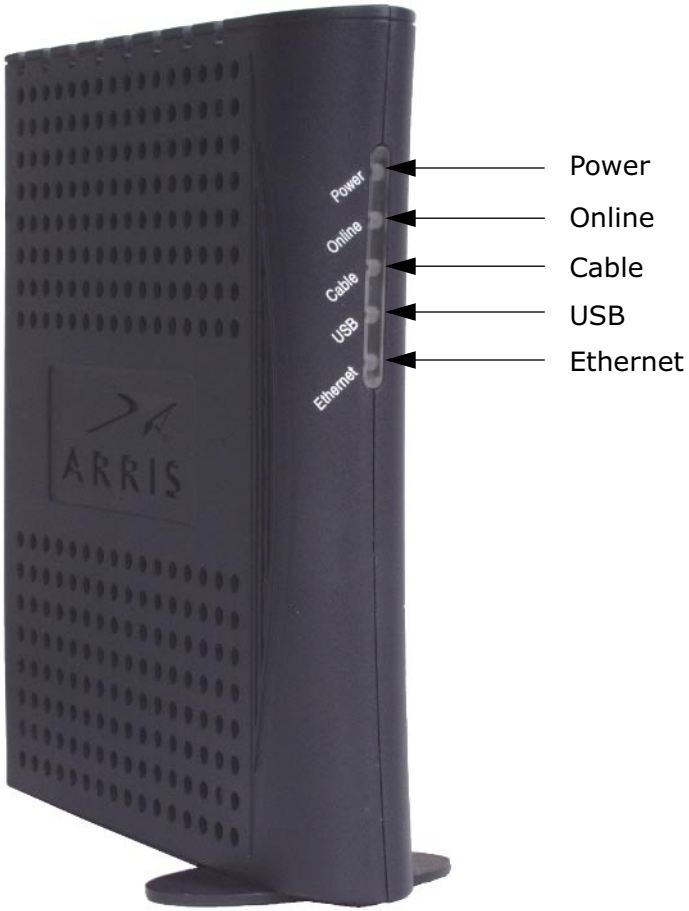
# Using the Cable Modem

This chapter describes the controls and features available on the Touchstone Cable Modem, and covers basic troubleshooting procedures.


- Setting up Your Computer to Use the Cable Modem
- Indicator Lights
- Using the Reset Button
- Using the Standby Button


## Setting up Your Computer to Use the Cable Modem

Follow the instructions in the information packet supplied by your cable company. Contact your cable company if you need help setting up your computer.




## Indicator Lights

The Touchstone™ Cable Modem has five lights to assist in troubleshooting.

### Patterns: Normal Operation

The following table shows light patterns during normal operation. An **x** indicates that the particular light is not important for determining the state.

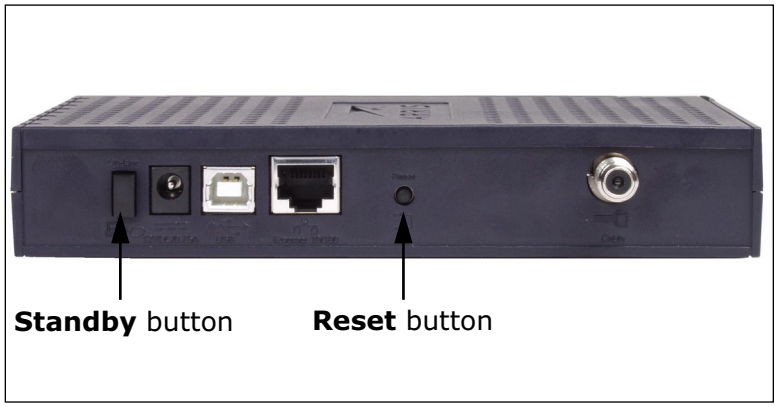
| Name | | | | | Description |
|---|---|---|---|---|---|
| **Power** | **Online** | **Cable** | **USB** | **Ethernet** | |
| Off | Off | Off | Off | Off | No power to Cable Modem |
| On | Blink | x | x | x | **Standby** switch active (the computers are disconnected from the Internet) |
| On | On | x | x | x | **Standby** switch inactive |
| On | x | On | x | x | No data to/from the cable interface |
| On | x | Blink | x | x | Data activity on the cable interface |
| On | x | x | Off | x | USB link disconnected (i.e. PC is disconnected or powered off) |
| On | x | x | On | x | USB link connected, no traffic |
| On | x | x | Blink | x | USB data activity with PC |
| On | x | x | x | Off | Ethernet link disconnected (i.e. equipment is disconnected or powered off) |
| On | x | x | x | On | Ethernet link connected, no traffic |
| On | x | x | x | Blink | Ethernet data activity with connected equipment |

See Using the Standby Button for more information about the standby mode.

## LED Indicators: Startup Sequence

The following table shows the Cable Telephony Modem light patterns during each phase of the startup sequence. An **x** indicates that the light is not important for determining the state.

| Name | | | | | Description |
|---|---|---|---|---|---|
| **Power** | **Online** | **Cable** | **USB** | **Ethernet** | |
| Off | Off | Off | Off | Off | No power to Cable Modem |
| On | Off | Off | Off | Off | Power-on Self Test |
| Blink | Off | Off | Off | Off | **Self Test failed** |
| Blink | Off | Blink | x | x | Scanning for downstream RF carrier |
| Blink | Off | On | x | x | Initial ranging in progress |
| Blink | Blink | On | x | x | Obtaining data IP address (DHCP) |
| Blink | On | On | x | x | Downloading data configuration (TFTP) |
| On | On/Blink | On/Blink | x | x | Data registration complete |




## Using the Reset Button

Use the **Reset** button, on the back of the Cable Modem, to reset the modem as if you disconnected power. You may need to reset the Cable Modem if you are having problems connecting to the Internet.

Use a pointed non-metallic object to press this button. The photo to the left shows the location of the **Reset** button.

The **Reset** button is recessed to prevent accidental resets.

## Using the Standby Button

The Cable Modem has a **Standby** button on the back panel. Press the **Standby** button to switch between:

- **Inactive (normal) mode**: the Ethernet and USB interfaces are connected to the Internet. The **Online** light stays on to indicate normal mode.
- **Active (standby) mode**: the Ethernet and USB interfaces are disconnected from the Internet. Computers connected to the Ethernet and USB interfaces can still communicate with each other, but not with the Internet. The **Online** light blinks to indicate active mode.

The Cable Modem remembers the standby setting when you reset the Cable Modem or turn it off.

The **Standby** button has no effect while the **Power** light is blinking.

# Troubleshooting

## Problems and Solutions

**The cable modem is plugged in, but the Power light is off.**

Check all power connections. Is the AC adapter plugged in firmly at both ends?

If you plugged the AC adapter into a power strip, make sure the strip is switched on.

Avoid using an outlet controlled by a wall switch, if possible.

Finally, check the fuse or circuit breaker panel.

**I'm not getting on the Internet.**

It may take up to 30 minutes to establish a connection the first time you power up your Cable Modem, especially when a lot of people are online. Always leave your Cable Modem plugged in and connected; use the **Standby** button to disconnect your PC from the Internet.

Check the front panel lights:

- The **Power** and **Online** lights should be on.
- If the **Online** light is blinking, press the **Standby** button.
- The **Cable** light should be either on or blinking.
- One of the **USB** or **Ethernet** lights should be on or blinking.
- If the **Power** light blinks for more than 30 minutes, call your cable company for assistance.

Check your cable connections. Connectors should be finger-tight and then tightened a further 1/8 turn with a wrench. The coax cable should not be pinched, kinked, or bent sharply—any of these can cause a break or short in the cable (you may have to replace the cable).

Proceed to the USB or Ethernet solutions (next page) if necessary.

**I'm not getting on the Internet. (USB)**

Did you load the USB drivers?

If you are using a powered USB hub, is the hub turned on?

Check the USB cable connections. Disconnect and reconnect the USB cable.

Restart the PC.

Press the **Reset** button on the back of the Cable Modem.

**I'm not getting on the Internet. (Ethernet)**

If you are using a hub, is the hub turned on?

Are you using the right type of Ethernet cable? (Straight cable for direct connection to a PC, cross-over cable for connection to a hub.)

Press the **Reset** button on the back of the Cable Modem.

**I can get on the Internet, but everything is slow.**

If the Web site you are visiting is very popular, that site may be having trouble servicing all the requests. If other sites download quickly, wait for a few minutes and try again.

If your Cable Modem is connected to a LAN (Local Area Network), either directly or through a firewall, other communications on the LAN may slow down your connection.

**I have two PCs connected to the Cable Modem, but only one can get on the Internet.**

Check your cable company's terms of service: they may allow only one computer to connect directly to the Cable Modem. If this is the case, you can connect a broadband router or hub between the Cable Modem and your computers.

**I'm concerned about security.**

Having a high-speed, always-on connection to the Internet requires a certain amount of responsibility to other Internet users—including the need to maintain a reasonably secure system. While no system is 100% secure, you can use the following tips to enhance your system's security:

- Keep your operating system updated with the latest security patches. Run the system update utility at least weekly.
- Keep your email program updated with the latest security patches. In addition, avoid opening email containing attachments, or opening files sent through chat rooms, whenever possible.
- Install a virus checker and keep it updated.
- Use the **Standby** button on your Cable Modem to disconnect your PC from the cable system when you are not using the Internet.
- Avoid providing web or file-sharing services over your Cable Modem. Besides certain vulnerability problems, most cable companies prohibit running servers on consumer-level accounts and may suspend your account for violating your terms of service.
- Use the cable company's mail servers for sending email.
- Avoid using proxy software unless you are certain that it is not open for abuse by other Internet users (some are shipped open by default). Criminals can take advantage of open proxies to hide their identity when breaking into other computers or sending spam. If you have an open proxy, your cable company may suspend your account to protect the rest of the network.
- If you connect your Cable Modem to a wireless LAN, make sure you enable security and encryption on the wireless hub (for the same reason that you should run only secured proxies). Consult the documentation and technical support of the wireless equipment provider for help.

## Testing the Power Connection

Use this procedure to check and correct any powering problems.

### Instructions

1. Connect the Cable Modem according to the steps in Installing and Connecting Your Cable Modem.
2. Watch for the **Power** light to come on or start blinking.
3. If the **Power** light does not come on:
   - make sure that the AC adapter is properly connected to both the Cable Modem and the AC outlet.
   - make sure that the AC outlet is not controlled by a switch. If an unswitched outlet is not available, make sure the wall switch is on.

## Troubleshooting USB Problems

Follow these steps if the PC does not auto-detect the Cable Modem using a USB connection.

Before you start, make sure that:

- You have properly installed and configured the Cable Modem as shown in Installing and Connecting Your Cable Modem.
- You have installed the USB drivers as shown in Installing USB Drivers on Your PC.
- The cable company has set up your account. Call your cable company if you're not sure.

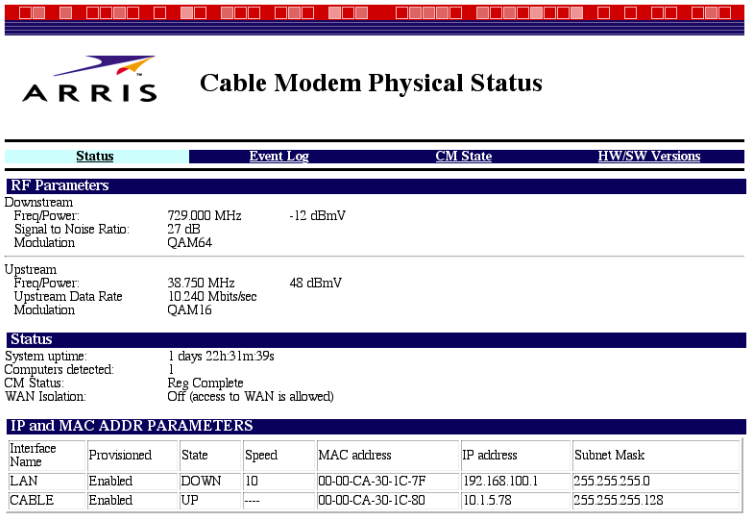
### Instructions

1. Be sure that your PC is running either Windows 98SE, Windows 2000, Windows ME, or Windows XP (Windows 95 and Windows NT are **not** supported).
2. Be sure the Cable Modem has power. The **Power** light should be on.
3. Push the **Reset** button on the back panel of the Cable Modem, using a pen tip or other sharp non-metallic object.
4. Disconnect the USB cable from the PC and reconnect it.
5. Restart the PC.
6. Replace the USB cable.
7. Call your cable company for help.

## Web-based Troubleshooting Interface

The Cable Modem software has a web-based interface to a status monitoring and troubleshooting subsystem. Status information is available by using a standard web browser to access the Cable Modem IP address. The information in these screens may be helpful when calling the cable company about a problem.

The following sections describe the screens available from the web interface. See Accessing the Troubleshooting Interface for instructions on accessing the screens.



ARRIS **Cable Modem Physical Status**

Status | Event Log | CM State | HW/SW Versions

**RF Parameters**

Downstream
- Freq/Power: 729.000 MHz -12 dBmV
- Signal to Noise Ratio: 27 dB
- Modulation: QAM64

Upstream
- Freq/Power: 38.750 MHz 48 dBmV
- Upstream Data Rate: 10.240 Mbits/sec
- Modulation: QAM16

**Status**

- System uptime: 1 days 22h:31m:39s
- Computers detected: 1
- CM Status: Reg Complete
- WAN Isolation: Off (access to WAN is allowed)

**IP and MAC ADDR PARAMETERS**

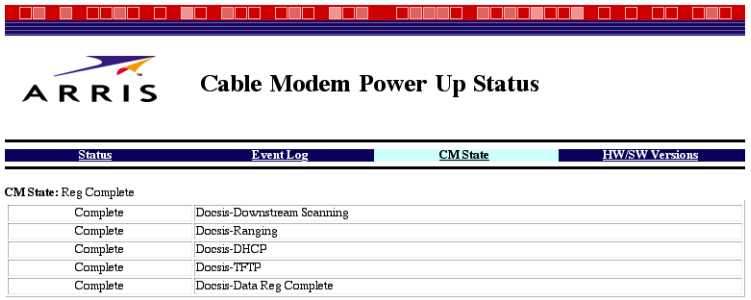
| Interface Name | Provisioned | State | Speed | MAC address | IP address | Subnet Mask |
|---|---|---|---|---|---|---|
| LAN | Enabled | DOWN | 10 | 00-00-CA-30-1C-7F | 192.168.100.1 | 255.255.255.0 |
| CABLE | Enabled | UP | ---- | 00-00-CA-30-1C-80 | 10.1.5.78 | 255.255.255.128 |

### Physical Status Screen

The Physical Status screen is the index page, and can also be selected by choosing the **Status** link at any standard screen.

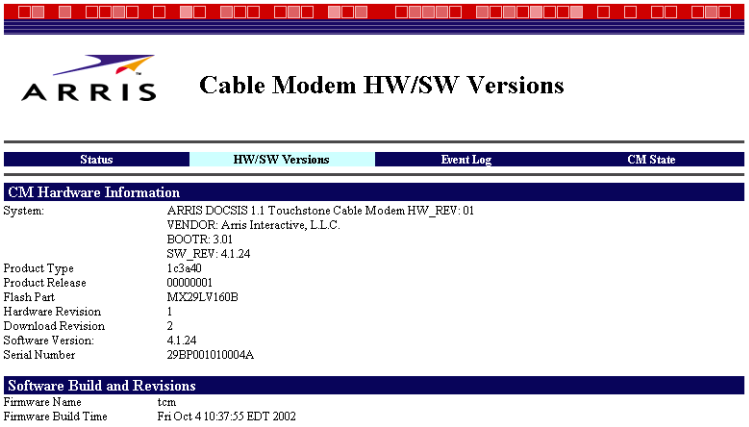
The screen consists of three major sections:

- RF parameters—details of how the Cable Modem is communicating with the cable company equipment
- System status
- IP and MAC addresses assigned to each interface. IP addresses are used to communicate over the Internet, and are assigned by your cable company. MAC addresses are used to communicate with devices on a LAN, or with the cable company equipment, and are part of the device. MAC addresses have nothing to do with the Apple Macintosh, although the Ethernet adapter in a Macintosh also has a MAC address.




## Power-Up Status Screen

The Power-Up Status screen shows the results of the Cable Modem registration process. To display this screen, choose the **CM State** link.




## Hardware/Software Versions Screen

The HW/SW Versions screen displays the hardware revision level of the cable modem and the version of the software currently running in the cable modem. To display this screen, choose the **HW/SW Versions** link.

## Accessing the Troubleshooting Interface

You can access the troubleshooting screens through the Cable Modem's Ethernet or USB connection.

### Requirements

You need the following equipment to access the troubleshooting pages:

- computer with a direct Ethernet or USB connection to the Cable Modem
- web browser

### Instructions

Perform the following tasks as necessary.

Follow these steps to access the troubleshooting pages.

1. Set up your computer's network as follows:
   - IP address: **192.168.100.2**
   - Subnet: **255.255.255.0**

   See the instructions for your operating system for details. Depending on the operating system, you may need to restart your computer.
2. Start your web browser and access the Cable Modem using the address **http://192.168.100.1/**

# Product Specifications

This chapter details the Touchstone™ Cable Modem product specifications.

## Electrical Specifications

### Electrical Ratings

AC Voltage (North America): 90V AC to 132V, 47 to 63 Hz

AC Voltage (Europe): 220V at 0.25A, 50Hz

Power: 9 watts

## Physical Specifications

### Physical Dimensions

Height: 1.2 inches (3.0 cm)

Width: 6.4 inches (16.3 cm)

Depth: 6.8 inches (17.2 cm)

### Weight

0.8 lb (350 g)

### Environmental Conditions

Indoor use only

Operating temperature: 41°F to 104°F (5°C to 40°C)

Operating humidity: 5% to 85% (non-condensing)

Storage temperature: -40°F to 158°F (-40°C to 70°C)

### Mounting Options

Wall mount: two positions; built-in mounting bracket

Desktop: horizontal or vertical; built-in swivel stand for vertical use

## Data Communications Specifications

### Ethernet Data Interface

10/100Base-T

### USB Data Interface

Full Speed (12 Mbps) USB 1.1

**Data Rates**

Downstream (North America): up to 42.88 Mbps

Downstream (Europe): up to 55.616 Mbps

Upstream (all): up to 10.24 Mbps

(speeds will vary depending on network use and cable company policies)

## Standards Compliance

**DOCSIS**

DOCSIS 1.1 compliant

DOCSIS 2.0 A-TDMA compliant

**Safety**

UL60950

89/336/EEC, 92/31/EEC, 73/23/EEC, 93/68/EEC

**FCC**

Part 15 Class B

**Other**

WHQL

# Glossary

The following is a list of common cable and networking terms.

## Terms and Abbreviations

**A/B Cable**

A USB cable that has a narrow rectangular connector on one end (A) and a notched square connector (B) on the other end.

**Category 5 (Cat5)**

A high-quality type of cable, used for Fast Ethernet (100BaseT) connections. When purchasing Ethernet cables, always look for Category 5 cable.

**Coaxial cable (coax)**

A thin wire, used to connect your television and Cable Modem to the cable TV system. You can buy coax from any electronics retailer and many discount stores.

**Cross-over**

An Ethernet cable used to connect two hubs (or a hub and a cable modem) together. Also, some Ethernet hubs may have built-in cross-over on one or more ports (which eliminates the need for a cross-over cable).

**DHCP**

Dynamic Host Configuration Protocol. An IP protocol used to provide an IP address and location of services (such as DNS and TFTP) needed by a device connecting to the network. DHCP allows the cable company to configure your computer's networking software for you.

**DNS**

Domain Name Service (Server). An IP service that associates a domain name (such as www.example.com) with an IP address.

**Downstream**

In an HFC network, the direction from the head-end to the subscriber. Some older cable documentation may refer to this as the forward path.

**DOCSIS**

Data Over Cable System Interface Specification. The interoperability standards used for data communications equipment on an HFC network.

**Ethernet**

A standard method of connecting two or more computers into a Local Area Network (LAN).

**EuroDOCSIS**

The European version of DOCSIS.

**Event**

An informational message used for monitoring network status. You can view events using the web-based troubleshooting interface.

**F-connector**

The type of connector used on coaxial cable. There are two common types of F-connector, slip-on and screw-on. Use coax with screw-on connectors for connecting your Cable Modem.

**Gateway**

The device, usually a router, that connects devices on a given IP subnet to other IP subnets.

**Headend**

The "central office" in an HFC network. The headend houses both video and data equipment. In larger cable networks, a "master" headend often feeds several "remote" headends to provide distributed services.

**HTTP**

HyperText Transfer Protocol.

**Hub**

A box with several Ethernet or USB connectors. Ethernet hubs provide a common point of contact for all connected devices; USB hubs allow you to add peripherals without installing a USB card in your computer.

**IP address**

A number assigned to your computer by your cable company, used to identify your computer to other systems on the Internet.

**ISDN**

Integrated Services Digital Network. A digital telephony standard that provides communication speeds about twice as fast as standard dialup.

**LAN**

Local Area Network. A network that allows computers in a single location (such as a building) to communicate with one another.

**MAC address**

A number that uniquely identifies any device connected to a network. Your cable company uses your Cable Modem's MAC address to authorize access to the Internet. The MAC address is printed on a label on the bottom of your Cable Modem.

**Protocol**

A set of rules and formats that determines the communication behavior of network entities at a given layer.

**Proxy**

A device or program that stands in between a server (for example, a web site) and a client (your browser), providing a way to relieve some of the burden from the server. For example, your cable company may have a web proxy that keeps copies of popular web pages; the proxy can send you those pages instead of fetching them directly from the web site, resulting in faster page loading and less network congestion.

**RF**

Abbreviation for Radio Frequency. Some literature refers to coax as "RF cable" and the connectors as "RF connectors."

**RJ-11**

A standard 4-pin modular connector, commonly used in North America for connecting telephones.

**RJ-45**

A standard 6-pin modular connector, commonly used on Ethernet cable. An RJ-45 connector looks like a wide RJ-11 (telephone) connector.

**Splitter**

A small box with three cable connectors: one input and two outputs. You may need a splitter if you have a TV already connected to the cable outlet that you want to use for your Cable Modem. You can buy a splitter from any electronics retailer and most discount stores.

**Standby mode**

A Cable Modem operating mode that disconnects the Ethernet and USB interfaces from the Internet. The Cable Modem's **Online** light blinks while the modem is in Standby mode.

**Switched outlet**

A power outlet that may be turned on and off using a wall switch. Usually intended for lamps. Avoid plugging your computer or Cable Modem into a switched outlet to avoid disruptions.

**TCP/IP**

Transmission Control Protocol/Internet Protocol. The protocols used to facilitate communications across one or more connected networks.

**TDMA**

Time Division Multiple Access. A method used by DOCSIS-compliant cable modems for sending upstream data with minimal interference.

**Upstream**

The path from a subscriber device to the headend. Some older cable documentation may refer to this as the return path or reverse path.

**USB**

(Universal Serial Bus) An interface used for connecting a variety of accessories, such as keyboards, mice, printers, and communications devices (such as cable modems) to a single PC.

**WHCL**

Windows Hardware Compatibility Labs. A division of Microsoft that certifies hardware as being compatible with Windows operating systems.